

Appln No. 09/863,778

Amdt date September 29, 2004

Reply to Office action of March 29, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A "superluminal" transmission device for measuring the tunneling time of a wavepacket comprising:

a transmission source for generating a wavepacket, the wavepacket comprising a wavefront component;

a signal controller for generating a signal pulse;

a signal receiver for receiving the signal pulse;

a selective-transmission device comprising a quantum barrier defining a transmission distance, said selective-transmission device being in signal communication with the transmission source, the signal controller, and the receiver such that the wavepacket is transmitted to the barrier and the wavefront component of the wavepacket tunnels through the barrier and across the transmission distance to the receiver causing "superluminal" group velocities; and

a monitor in signal communication with the receiver for determining the centroid time for each of a plurality wavepacket peaks; ~~and~~

an analyzer for computing the vector group velocity of light from the measured centroid times; and

wherein the analyzer is configured to measure the vector group velocity with sufficient resolution to detect variations in the vector group velocity resulting from changes in the orientation of the device.

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2. (Currently amended) The "superluminal" transmission device as described in claim 1, wherein the quantum barrier comprises a pair of transmission barriers positioned parallel to each other and separated by an air gap having a length.

3. (Currently amended) The "superluminal" transmission device as described in claim 2, wherein the pair of transmission barriers are tanks defining an internal volume capable of holding a liquid.

4. (Currently amended) The "superluminal" transmission device as described in claim 3, wherein the liquid is water.

5. (Currently amended) The "superluminal" transmission device as described in claim 2, wherein the length of the air gap can be adjusted such that the length of the air gap enhances the wavefront component of the wavepacket transmission.

6. (Currently amended) The "superluminal" transmission device as described in claim 1, wherein the transmitter comprises a pulse transmitter in signal communication with a transmission antenna.

7. (Currently amended) The "superluminal" transmission device as described in claim 6, wherein the antenna is a five element folded-dipole Yagi antenna.

8. (Currently amended) The "superluminal" transmission device as described in claim 1, wherein the transmitter further comprises a wavelength selector such that only desired radio wavelengths are transmitted by the transmitter.

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9. (Currently amended) The "superluminal" transmission device as described in claim 1, wherein the receiver comprises a radio amplifier in signal communication with a receiver antenna.

10. (Currently amended) The "superluminal" transmission device as described in claim 9, wherein the antenna is a five element folded-dipole Yagi antenna.

11. (Currently Amended) A method for measuring the vector group velocity of light comprising utilizing a "superluminal" transmitter as described in claim 1 to measure the centroid time of wavepacket voltage peaks.

12. (Previously presented) A method for determining the date and time comprising utilizing a "superluminal" transmitter as described in claim 1 to measure the oscillation of the group velocity over a specified period of time, determining the Doppler redshift direction from said group velocity oscillation, and comparing said Doppler redshift direction verse the Earth's motion.

13. (Previously presented) A method for determining the direction of the cosmic microwave background Doppler redshift comprising utilizing a "superluminal" transmitter as described in claim 1 to measure the oscillation of the group velocity over a specified period of time and determining the group velocity minimum.

14. (Previously Presented) A method for determining the time and date comprising utilizing a "superluminal" transmitter as described in claim 13 to compare the direction of the cosmic

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microwave background Doppler red shift relative to the Earth's motion.

15. (Currently Amended) The "superluminal" transmission device as described in claim 1, wherein the analyzer further determines the cosmic microwave background Doppler red shift direction by monitoring the group velocity tunneling time oscillation over a specified period of time and determining the group velocity tunneling time minimum.

16. (Currently amended) The "superluminal" transmission device as described in claim 15, wherein the analyzer further determines the date and time by computing the cosmic microwave background Doppler red shift direction relative to the Earth's motion.

17. (Currently amended) The "superluminal" transmission device as described in claim 1, wherein the selective transmission device is rotatable about an axis such that the direction of the wavepacket transmission may be shifted about the axis.

18. (Currently amended) The "superluminal" transmission device as described in claim 17, wherein the analyzer further determines the cosmic microwave background Doppler red shift direction by monitoring the group velocity tunneling time oscillation as the direction of the wavepacket transmission is shifted about the rotatable axis and determining the group velocity tunneling time minimum.